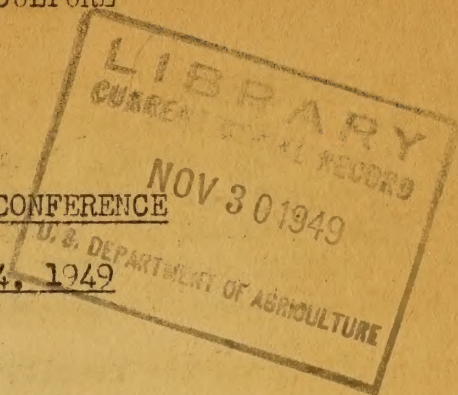


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UNITED STATES DEPARTMENT OF AGRICULTURE
Extension Service
Washington 25, D. C.

REPORT OF
LIVESTOCK PRODUCTION AND MARKETING CONFERENCE

JACKSON'S MILL, W. VA., JUNE 21-24, 1949



This interregional conference was attended by some 60 persons from 17 States and the District of Columbia. They included extension and research workers in the fields of livestock production and marketing and representatives of public and private service agencies. A list of those registering at the conference will be found on pages 34, 35, and 36.

The conference was one of a series of similar conferences held at different locations in the general Appalachian area, with some interruptions, over a period of about 20 years.

The invitation to meet at Jackson's Mill this time was extended by Director J. O. Knapp of the West Virginia Extension Service, and in turn relayed to the States concerned by Director Wilson of the Federal Extension Service.

Considerable material, including project reports, bulletins, etc., furnished by program participants, was distributed at the conference, and therefore not included in this report.

Committees were appointed at the opening of the conference for the purpose of preparing reports on some of the principal fields of interest. Such reports, adopted by the conference, are a part of this report, and should provide guidance in the further development of programs.

The talks made by two of the key speakers, C. A. Burmeister and A. T. Edinger, have been mimeographed separately and copies are enclosed with this report. Some of the other talks were briefed for inclusion herein and some mention is made of other matters, but the report is not to be considered a complete account of the proceedings of the conference.

At the final session a motion was adopted to accept the tentative invitation of the University of Kentucky for the group to meet at Lexington, Ky., in 1950. A committee made up of Benjamin F. Creech, of West Virginia; John E. Foster, of Maryland; George C. Herring, of Virginia; and R. C. Miller, of Kentucky (Ray C. Hopper, alternate) was appointed to have charge of arrangements for the 1950 meeting. This committee invites suggestions for next year's program.

C. D. Lowe, Extension Service
United States Department of Agriculture

LAMB-GRADING EXERCISES

C. P. McClaugherty, Robert E. Rector, and E. L. Shaw served as a committee to select and grade a group of market lambs from the regular receipts at the nearby Weston coop yards. Members of the conference were given the opportunity to grade these same lambs and to compare their ratings with those of the committee. Part of the lambs graded on foot were slaughtered and their carcasses made available for later grading by the group after being graded by Stanley Marrs, official PMA grader.

An analysis of the results of the grading, made by Ben Morgan, follows:

On-Foot Grading. Twenty-six individuals handed in complete sets of grading cards. The grading by these individuals was similar to the results in 1948. The 26 were divided into three groups as follows:

Group one, 11. - This group was very consistent, being within one-third grade of the average official grade on three-fourths of the lambs.

Group two, 7. - This group was consistent in its grading, being however consistently below the average of official grades. Six of the group averaged one grade below the official grades and one of this group was consistently one grade high.

Group three, 8. - Erratic. Individuals in this group were a grade or more off in both directions on several lambs.

Carcass Grading. Twenty-seven individuals turned in complete sets of cards in the carcass grades. These grades followed very closely the same pattern indicated in the live lamb grades. The group were as follows:

Group one, 10. - This group was within one-third grade of the official grades on at least two-thirds of the carcasses.

Group two, 7. - Consistent, but either high or low, four of them being approximately one grade higher than the official grades, the other three being approximately one grade lower than the official grades.

Group three, 10. - This group was very erratic, being one or more grades off in both directions.

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WHAT'S WRONG WITH THE SHEEP PICTURE?

Excerpts From Talk

By Howard Vaughan, President, National Wool Growers' Association

The National Wool Growers' Association appreciates the opportunity to be present at and to take part in this conference.

We have long been aware of the fact that the wool-growing interests of the East and South should be represented to a larger extent in the national association.

We also appreciate that the future of the sheep business in the East and South is bright because of the large amount of forage adaptable, especially to sheep that can be cheaply grown in this section of the country. We also appreciate that in many Eastern and Southern States it has been found to be particularly profitable to raise lambs from ewes that have been purchased in the western range country. The close relation of our practical interests in the sheep business, therefore, become more apparent with each new appreciation of the actual conditions that attain in our respective areas.

The National Wool Growers' Association is purely a service organization established over 80 years ago to represent the actual growers of sheep all over the United States. The NWGA does not buy or sell wool or anything else.

Outside its office force none of its officers are paid and its entire executive committee is composed of men who are actually in the sheep business and who serve gratis for the purpose of helping the sheep industry.

The NWGA has two main purposes, first to support and extend the use of wool. For this purpose we have organized the National Wool Council with headquarters in New York City, which affiliates with the International Wool Secretariat, which represents the British Empire with headquarters in London. These Organizations are trying to extend the use of wool by means of advertising and through scientific investigation to find means that will make the wool fiber more useful in every possible way. The other purpose of the association is to support and extend the use of lamb meat. This is being done through our support of the National Lamb Industry Committee and through our support of the work of the National Livestock and Meat Board located in Chicago and of which R. C. Pollock is manager. This organization has for its purpose the investigation of all useful properties of all kinds of meat and the extension of the use of meat everywhere in the United States.

Our promotion of lamb and wool extends into legislative affairs because of the fact that sheep can be raised cheaper in several foreign countries than in the United States. At present about two-thirds of the wool used in the United States is produced in foreign countries. It is therefore obvious that if a wool growing industry is to be maintained in the United States against the cheaper competition from abroad it will be necessary to maintain some type of Government support. The historic nature of this support has been the tariff, but the present attitude of public officials seems to favor reciprocal trade agreements in which reduction of tariffs on incoming wool is used to encourage foreign purchases of products manufactured in the United States. In view of this attitude of the Government, it seems obvious that wool growers must expect support from some source other than tariff.

Since about 1940, when costs of producing sheep in the United States compared to similar costs in foreign countries have been greatly increased, the number of sheep grown in the United States has decreased approximately 40 percent. During this time well-known economists, including many Government officials, as well as the Army and Navy Munitions Board have stated that a considerable wool-growing industry in the United States is very important both to the economy of the country in peacetime and to the safety of the country should another war occur.

Among the reasons that have contributed to the unprecedented decrease in sheep production in the United States during the last 8 years, the following may be listed:

1. High labor and feed costs that were out of line with the return possible in the sheep business.
2. Ceilings placed upon the price of both lamb and wool early in the war period which did not place these products on an equal basis with competitive food and fiber products.
3. Relatively cheaper costs of wool production abroad which made it possible for foreign growers to pay the tariff and still sell their wool cheaper in this country than our growers can afford to produce it for.
4. A reduction of 25 percent in the tariff on wool and the general feeling in the wool trade that further reductions might be made in the interests of reciprocal trade agreements.
5. General talk during the war that meat was an expensive food product and that grain diet should be promoted in its place.
6. The attitude of Government bureaus controlling the use of public lands in limiting the number of livestock that can be run on those lands. Also the establishment of a large number of national parks from which livestock are wholly excluded.
7. The insistence by the War Department that large areas suitable for the production of grass be used for bombing purposes when there were similar areas completely unproductive of any useful forage that seemed more practical for such purposes.
8. Some reduction occurred, particularly in farm flocks, due to the higher income per acre from land used for the production of grain or vegetables or milk products during the war.

In spite of the fact that sheep numbers in the United States are now at the lowest point since the Civil War, it seems inevitable that there will be a gradual increase in the future. This prediction is based upon two facts: First, the people of the United States are demanding more pure-wool clothing and more wool in general clothing fabrics than ever before. Second, studies made by the National Livestock and Meat Board indicate that 95 percent of the people like lamb meat provided it is cooked properly. Also, it will just not be economically sound for this country to continue to waste grass over vast areas of the West by depriving livestock of the opportunity to utilize it by restrictive regulations.

We feel that the future of sheep raising anywhere in the United States is good because of the small number of sheep now in the country and the relatively favorable position of demand to supply, both as regards wool and lamb meat.

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A FEW NEW DEVELOPMENTS IN ANIMAL NUTRITION

Excerpts From Talk

By Jerry Sotola, Livestock Bureau, Armour & Co.

The farm animal - the sheep and the cow - has not within itself the mechanism and the enzymes for digesting the fiber present in our huge tonnage crops. This fiber, made up of cellulose and lignin and cutin, must be digested through the action of the microbes in the paunch, and we know that as the microbes in the paunch act upon this fibrous matrix, they must be nourished to do the job effectively. If we have a superabundance of fiber, the bacterial action results in the liberation of phenols, and the phenolic substances have a paralyzing effect upon the proteolytic enzymes and further depress the digestibility of proteins. Depressing protein digestion when you have a ration already low in protein puts your animals into a negative nitrogen balance. Furthermore, the phenols liberated through the bacterial action upon the fibrous matrix tie up phosphorus producing a deficiency, one of the chief symptoms of which is a depraved appetite. Therefore, supplementary feeding must be geared to the composition of the forage these animals eat. Protein may be needed to nourish the bacteria; also as a source of vitamin A, as there is no direct source of vitamin A in vegetable tissue. It comes largely as the precursor, the chief one of which is the beta carotene. We find 10 percent alpha, 90 percent beta, and just traces of gamma in common hays. And through the carotenase activity of the liver the molecule of beta carotene is split to yield the active vitamin A. The next possible ingredient of supplementary feed should be a phosphate.

We know that cobalt given by mouth to ruminants, even at the rate of an ounce of cobalt sulphate per hundred pounds of salt, has a stimulatory effect upon the microorganisms of the paunch; and since the responsibility of fiber digestion rests upon these microorganisms, it is important that we consider those little things in nutrition that help this important chain of events. Cobalt given by injection does not stimulate the microbial life of the paunch.

McElroy showed us that under proper conditions of nutrition, the rumen is a vitamin laboratory, with many of the B-complex vitamins being synthesized; some of which are thiamine, riboflavin, nicotinic acid, biotin, pantothenic acid, and folic acid.

Last winter's storm experiences made many ranchers conscious of the fact that there are differences in the quality of hay, and that the premium paid for good-quality hay, when the haul is long, is well spent. Putting up hay is an art, like making biscuits, and we know that important nutritional qualities of the heavy tonnage roughages are contained in the leaves, and that the crop should be handled in such a manner that the maximum retention of leaves is assured. Leaves comprise close to 55 percent by weight of alfalfa hay, but those leaves contain most of the digestible protein. They also contain 85 percent of the calcium, and most of the phosphorus and carotene.

I have seen 4-H Club boys and the Future Farmers leading calves into the show ring, with the calves having puffed-up joints, and showing sluggishness. The research of Dr. Washburn at Colorado, showed that such calves have small kidneys. There are other things wrong especially with the endocrine glands. How do they raise these calves? They put them on a nurse cow, they feed them

boiled barley, they feed them linseed oil, they give them brown sugar, and they give them lots of linseed meal. It is a wonderful project for a youngster because he learns to work. He learns to work in a steady manner. It is a fine lesson for all of us. Dr. Washburn showed that when a calf nurses, the milk does not come in contact with a metal pail. And when the milk comes in contact with a metal pail it picks up enough copper ions to help the hemoglobin picture. A lot of the show calves are quite anemic but a little of the copper ion changes the picture.

In Iowa and elsewhere with cattle coming from the range and fed according to the old-fashioned way, they often have trouble. We have outbreaks of enterotoxemia. Some of these calves should be sold rather than held, because they eat their heads off, but do not gain. When chopped roughage is fed with grain, these cattle feed out more evenly and satisfactorily. The feeder can vary the percentage of concentrates and of supplements according to need.

We in the packing industry wish we could have more research on what goes on in the tissues of animals that are subject to the adversities of long hauls. Certainly easing them onto feed, and resting them, giving them a source of water that will not be repulsive to them, taking it easy, must be the beginning.

When a good cow calves, the post-parturition period may be compared to the discharge of a gun. A ration has never been formulated that would keep a cow in a positive calcium and phosphorus balance in the early postpartum period. The cow goes into debt in terms of calcium and phosphorus, losing it from the osseous tissue, and the physiology of that process is most fascinating. During the dry period of the cow, the debt is paid through the feeding of a good ration, in which there is a balance between the calcium and phosphorus ion. For example, my study with alfalfa hay shows that the average percentage of calcium is 1.56 and phosphorus .26. There is a six-to-one ratio, but the animal needs it in a 1.8 to one or two-to-one ratio. How to balance it? Disodium phosphates used properly will create a balance. Whenever we have an imbalance of the phosphorus and the calcium ion, there is a strain on the vitamin D supply.

WHAT WINTER PASTURE IS DOING FOR MISSISSIPPI'S LIVESTOCK INDUSTRY

By

E. E. Grissom, Associate Extension Animal Husbandman
Mississippi State College

Results on hundreds of cattle farms in the pasture-fattening of cattle during the winter and spring months stand to evolve a newer, more profitable method of fattening and marketing cattle in Mississippi. There is the possibility that our whole cattle production plan can be placed in a stronger position by these changes.

Most range cattle go to market in the fall when the market supplies of such cattle are large. With winter and spring pastures of high beef-producing quality the pattern is beginning to shift and cattle are being sold off grass at better prices in March, April, May, and June rather than in September, October, and November.

Because grasses and legumes are in lush growth in the winter and spring months, these pastures produce beef more profitably than most summer and fall pastures. The situation permits those who need extra cattle to utilize these better spring pastures by buying needed stockers in the fall at an advantageous price and selling in the spring with more condition and weight, resulting in a profitable spread.

Oats planted in August or September at the rate of 100 pounds to the acre, properly fertilized, will be ready to graze in November by spring calves or steers produced on the farm or by stocker cattle that may be bought in October. In addition, legumes planted in oats may be counted on for full grazing in March, April, and May. Also, Caley peas planted on Bermuda or Johnson grass sod or with oats will give fine grazing during late winter and spring months. Gains by calves, yearlings, and 2-year-old steers, stocked at the rate of 450 to 500 pounds of cattle per acre, on best pastures have approximated 2 pounds daily per head, and during the 100-150 day pasture period gains of 200-300 pounds per head have been made. Such a pasture plan takes advantage of our ample moisture supply in the winter and spring, and cattle utilize the pasture when the forage is highest in protein, minerals, and vitamins. By selling surplus market cattle when fat in spring, the breeding herd wintered on silage or hay or winter pasture will not overgraze the summer and fall pasture provided for them. Fine examples of this type of pasture-cattle economy have been observed in every section of the State.

The Mississippi Experiment Station has used early-planted winter oats for the past several seasons to fatten stocker calves for market. Calves weighing 400 pounds, turned on September planted oats the first of December, have gained an average of 52 pounds each 30 days grazed, or 1.75 pounds daily per calf and have sold in March and April for approximately 30 dollars per head more than their cost when put on the grazing. The net value of crops used in this grazing experiment ranged from \$29.81 per acre for the lowest yielding plot to \$47.46 per acre for the highest yielding plot. These values were obtained after deducting all cost of seed, fertilizer, and land preparation.

Systems of wintering cattle will vary by areas and farms and by plans of production and management. Through the wide use of winter pasture from early planted small grains, there is the possibility of reducing winter feeding (which usually is for a period of 90 days) by 30 to 40 days and even more on individual farms. On many farms, however, it is impractical to plant enough winter pasture for all the cattle maintained because of a lack of land; and, if stockers, feeders, or replacements are carried over in addition to cow herd, winter pasture or other feeding plans will have to be included which may further restrict total grazing for cattle maintained. Part-time, daily grazing has made the winter pasture go farther where such plans have been carried out. In all cases, haystacks should be located in the winter pasture area for use by the cattle.

Our sheep enterprise in Mississippi does not carry the volume found in beef cattle, and hogs but is making good progress. According to USDA reports, Mississippi was the one State showing an increase in numbers of sheep in 1948. Summaries of 1948 lamb and wool pools show numbers of lambs and pounds of wool almost double those of any previous year. Indications to date point to a very definite increase in 1949.

The Delta area, under the leadership of county extension workers, is making the most rapid progress. Cotton farmers find sheep well adapted to land not suited to cotton, since they are light footed and utilize grazing crops to advantage at all seasons of the year. Other areas according to their importance are Prairie and Brown Loam. Some producers in South Mississippi are demonstrating that replacement ewes and market lambs can be produced in that area. Demonstrations like these may give new life to the sheep program in that section.

Since sheep are largely consumers of forage, one essential to successful lamb production is a year-round system of grazing. This can be had only through planning and management. Late-fall and early-spring grazing, among which are oats, rye grasses, and fescue, is recommended. These crops are successfully followed by lespedeza planted in early spring. Fall-planted crimson clover, red clover, white dutch clover, and Caley peas fit well into spring grazing plans in some areas. Sweet sudan, soybeans, and Alyce clover are excellent supplemental summer grazing crops in adapted areas.

Experimental tests, backed by farm demonstrations, have proved that lambs can be produced cheaper on good, well-managed pasture than on poor pasture supplemented by grain and low-grade roughage. Good grazing, plus good concentrate feed, if necessary, makes the best lambs.

Recent tests conducted at the experiment station to determine the value of finishing western lambs on winter grazing and the possibility of wintering replacement ewe lambs returned a net profit of \$24.28 to \$26.80 per acre for the 86-day grazing season and a saving per ewe through fall purchase over June and July delivered yearlings of \$4.39 to \$7.89.

COUNTY AGENT TRAINING SCHOOLS

By

Charles E. Bell, Jr., Livestock Specialist
Georgia Agricultural Extension Service

The primary mission of an extension subject-matter specialist is to train county agents to become proficient in the particular field with which the specialist is concerned. The specialist's work embraces many types of activities and all are important. However, we must always keep in mind that the specialist's influence in his State will be in direct proportion to the success he attains in training the county agents to develop his subject-matter program in the respective counties. The county agent is the person who reaches the individual farmer. Regardless of the number of contacts with the public the specialist is able to make, he can only directly influence a small percentage of the farm people.

The livestock or marketing specialist must continually check himself to keep from spending so much time on shows, sales, meetings, and the countless other activities related to his work, that he fails to perform his primary mission. One of the most effective means for accomplishing this is to conduct livestock

training schools for county agents and their assistants. Some of the advantages of county agents' training schools may be listed as follows:

1. Refresher courses on fundamental principles of animal breeding, nutrition, management, and health can be conducted, as many agents become rusty on information learned in college.
2. The agents can be brought up-to-date on latest technical information in the rapidly changing field of animal science.
3. Improved techniques in disease prevention, sanitation, and handling animals can be taught.
4. Agents have a chance to bring up individual problems which are discussed for the benefit of all present.
5. The specialist as well as the others present get new ideas from the experience of agents.
6. Inspiration and enthusiasm for a better livestock program is gained.
7. These schools offer an excellent opportunity to launch area programs.
8. Result demonstration procedure can be outlined and discussed.
9. The specialist becomes more proficient when holding schools regularly, because it is necessary to do a great deal of research in preparation for teaching.

Many other points could be mentioned, but the above should be enough to justify the efforts and time required by all concerned.

During the fall of 1946, an attempt was made to give all our county workers 1 day of schooling in livestock. One day of the annual State extension conference was set aside for this purpose. We soon discovered that the group was entirely too large, and the individual agents did not have an opportunity to express themselves.

In 1947, the livestock specialist was given a part on the program at each district meeting. Contact was made with all the county agents, but the time allotted was not sufficient to complete the training needed. Furthermore, the agents did not get a chance to see demonstrations and acquire personal proficiency in techniques.

During 1948, a new plan was experimented with in the southwest Georgia district. The district was divided into three areas which had distinctly different problems and livestock-management practices. A 1-day livestock school or clinic was held in each of these subdistricts. This plan had the advantage of bringing together small groups of agents, which made possible individual attention and discussion of local problems. Each agent was asked to attend in work clothes. The morning was devoted to discussions on breeding, feeding, management, disease, and parasites. After lunch a round table on local

problems and result demonstrations was conducted. The group then moved to a nearby livestock farm. Demonstrations were given with sprayers, dusters, dose syringes, emasculators, balling guns, dehorner, etc. The agents actually performed all of these operations themselves. The programs were full and took the entire day, but the agents were enthusiastic over the results. Prior to making up the programs, a questionnaire was sent out to the agents to determine what information they were most interested in. The program was then designed to fit the specific needs of that subdistrict.

The 1949 plan of work scheduled a series of 1-day group schools for agents to be held in each of the six Extension districts. To date five districts have been covered. This method has proved a successful way to reach the agents effectively.

In addition to the schools mentioned, we are holding 1-day county-wide schools for farmers in counties where specific problems arise. These schools are usually held in livestock auction barns, as the facilities lend themselves to mass instruction. The sales ring is ideal for demonstration purposes, and seating enables the audience to hear and see what is going on. Attendance at each of these schools has been between 150 to 700 farmers. Interest in livestock subject matter has been so keen that we have had no difficulty in holding the attention of the audience throughout the day.

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THE MEAT-TYPE HOG

By

John H. Zeller, In Charge, Swine Investigations
United States Department of Agriculture, Beltsville, Md.

For a number of years the lard surplus in this country has been a depressing factor in the price of hogs. In the late twenties, research work was begun by the United States Department of Agriculture and State agricultural experiment stations to develop a hog that would produce more meat and less lard. The results of these experiments indicated that the Intermediate type hog finishing at weights of 180 to 225 pounds met the great bulk of market demands for a good type carcass.

In 1934 the Department of Agriculture, in cooperation with the Iowa Agricultural Experiment Station, imported 23 Danish Landrace hogs for research studies. At Beltsville the chief aim was to discover and improve new methods by which hog raisers could produce, most efficiently, the kind of products most consumers prefer. The Landrace breed was selected because the swine industry of Denmark for years had been keeping a systematic record of performance with respect to breeding, feeding, and carcass quality.

The Landrace breed was crossed with American breeds to develop hogs combining the good qualities of the Landrace with those for which the domestic breeds are outstanding, to produce a hog similar in type and conformation to the Landrace. The breeding plan was to cross, then backcross alternately to the parent breeds used in the crosses, together with matings within the generation

to obtain the desired color. From the foundation of the different strains inbreeding was increased, on the average, about 5 percent per generation so that the strains are now inbred approximately 35 to 40 percent, and are breeding fairly true for characters of economic importance.

Eight inbred strains based on various crossbred foundations have been developed. The new strains are prolific and average approximately 9-1/2 to 10 pigs per litter at farrowing. Pigs in litters being tested under record of performance conditions are making an average daily gain of approximately 1.4 pounds from weaning to 225-pound weight, with an average feed consumption of less than 360 pounds of feed per 100 pounds of live-weight gain when fed in dry lot. The animals reach market weight at 5-1/2 to 7 months of age. These strains are cutting out, on the average, from 46 to 50 percent of the live weight at slaughter in the five preferred cuts, namely ham, loin, bacon, picnic and shoulder butt. From 1-1/2 to 1-3/4 inches is regarded as the most desirable thickness of back fat. These strains are cutting out, on the average, about 5 percent more of the trimmed primal cuts of pork than the average run of hogs on the market. They also cut out a higher muscle-bone ratio.

Two years' results in testing the combining ability of the strains among one another show that litters from several crosses averaged about 2 pounds more per pig at weaning weight than litters of comparable parental strains. The crossbreds excelled the inbreds out of similar groups of sows by 13.6 and 29.4 percent in number of pigs per litter at birth and at weaning respectively, by 41.4 percent in weaning weight per litter, by 9.2 percent in weaning weight per pig, by 6.6 percent in weight of pig at 140 days, and by 4.0 percent in average daily gain per pig from weaning to 225-pound live weight.

During the next 2 years a test will be conducted in cooperation with the Pennsylvania Agricultural Experiment Station to test the combining ability of seven inbred strains from Beltsville with Purebred Berkshires, Chester Whites, Hampshires, and Poland Chinas on farmers' herds in the State. Seven breeders of each of these four breeds (28 cooperators in all) have agreed to divide their herds using a minimum of six purebred sows that will be bred to the purebred boar of the farmer's choosing, and the other six sows to be bred to a boar of one of the Beltsville strains. Pigs from each litter will be selected at weaning and fed out by groups in separate lots on pasture from weaning to 225-pound weight. Three packing companies have agreed to slaughter hogs for carcass cut-out studies. Market grade will also be obtained at slaughter time. Cutting of the hogs will be supervised by meat specialists from Beltsville, Md., and State College, Pa. A man will be employed full time to visit the farms of the 28 cooperators and obtain pig weights at stated intervals. The Pennsylvania Experiment Station will run a similar test at State College to those on farms in the State. At Beltsville, purebred boars of the four breeds aforementioned will be mated to pure-line sows at Beltsville (the reciprocal of the crosses used on farms in Pennsylvania). Purebred gilts will also be used at Beltsville to furnish a check among purebreds of American breeds, pure lines developed at Beltsville, and crosses as outlined.

SOW TESTING IN MICHIGAN

By

H. F. Moxley, Extension Animal Husbandman
Michigan State College

The Michigan Sow-Testing Project was started in 1945 with the slogan, "More pork from fewer sows." Litters entered are earmarked at birth. The farrowing date and record are verified within 7 days by an official witness. The pigs are weighed out at 56 days or as near that age as possible and the weights adjusted to the 56-day basis, through use of a conversion table. The witness may be the county agricultural agent, the vocational agriculture instructor, or someone appointed by them.

To encourage participation in the project, the Michigan Swine Breeders' Association awards a medal to each contestant making certain achievements. Medal awards are determined as follows:

1. Litters from sows: Gold, 400 pounds or more,
Silver, 350 to 399 pounds,
Bronze, 300 to 349 pounds.
2. Litters from gilts: Gold, 350 pounds or more,
Silver, 300 to 349 pounds,
Bronze, 250 to 299 pounds.

Each participant is eligible for only one medal, the one representing the highest litter weight from his herd. Sows and gilts raising litters weighing 250 pounds or more are listed in the project report each year.

About 80 percent of the litters that were entered finished the project over the 4 years. Sixty-three percent of the sows and gilts finishing the project produced litters weighing 250 pounds or more. Records on 1,198 litters and 10,114 pigs weaned were obtained. The average-size litter weaned was 8.4 pigs and the average pig weight 33.2 pounds.

Size of litter is of major importance in achieving high litter weight. There is little difference in average pig weight due to litter size in litters up to 11 pigs. There is a wide weight range within each litter-size group. The high average pig weight has fallen in a different litter-size group each of the four years the project has been conducted. Only 2 litters of 8 pigs have attained 400 pounds or more at weaning.

Results of each of the 4 years are very similar. Each year the 10 high sows weaned as many pigs as the 20 low ones. The litters of the 10 highest producers weighed as much at 56 days as the litters from the 30 low sows.

The enteries have been almost equally divided between sows and gilts. Mature sows have weaned 0.5 to 1 pig per litter more each year than did the gilts. The pigs from sows averaged 2 to 4 pounds heavier than the pigs from gilt litters. Advantage of litter size and pig weight in favor of the sows over gilts is increasing since good sows are kept and the poor producers culled.

Some idea of the repeatability is gained from the fact that 28.8 percent of the litters in the 1948 project were from sows that had made records or from gilts whose dams had been tested. Of the litters weighing 400 pounds or more, 43.2 percent were from tested dams. There is a strong tendency for sows producing heavy litters to repeat. There is a great variation in the production records of gilts from tested sows, even among litter mates. One farmer had a sow that weaned a 1948 spring litter that at 56 days weighed 534 pounds and also a fall litter from the same sow that weighed 502 pounds. As a gilt the preceding year, this sow weaned a litter that weighed 484 pounds. The dam of this sow won the 1946 project with a litter that weighed 579 pounds at 56 days of age.

The principal value in increasing productivity in swine so far has been by improved management through extension contacts with project cooperators. For example, one county that had only 9 litters weighing over 250 pounds in 1945 had 46 in 1948. On several farms the weaning weights increased as the cooperators found out how to improve their feeding and management practices.

Another value lies in the increasing interest in production factors. Breeders and buyers are becoming more observant of the number of udder sections, femininity, litter size, and other indications of production. There is a tendency for gilts and boars of acceptable type from production litters to outsell those from small litters or those with poor underlines.

The almost constant contact between the extension staff and the county leaders in sow testing has been a big factor in the establishment of 7 county and district swine breeders' associations representing 12 counties.

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MARYLAND SWINE WORK

By

Boyd T. Whittle, Associate Extension Animal Husbandman
Maryland Extension Service

The number of sows farrowing in Maryland increased from 22,000 in 1941 to 30,000 in 1948. The relative increase of purebred and grade herds has been slightly in favor of the purebreds. All the well-established breeds are found in the State associations being maintained by the Hampshire, Yorkshire, Berkshire and Hereford breeders.

These State breed associations have followed the practice of sponsoring at least one type conference or field day at some time during the summer months. The Hampshire Association has taken the lead in this activity, highlighted by a series of district-type conferences held within the State in 1948. Maryland ranks high among the States in number of Hampshire sows qualifying for Production Registry. A Maryland Hampshire breeder has also won the individual herd award for 2 consecutive years. We in the Extension Service have cooperated in organizing and conducting these programs and feel that our work with these associations produces good results.

These various organizations also hold a fall and spring sale of bred and open gilts and boars, which have been a means of distributing good foundation stock to young farmers and beginners in the swine industry as well as providing a market for the best-type hogs of the members of the associations.

Some of the organizations also have sponsored picnics and tours to promote interest among breeders as well as to inform them of the latest developments in swine feeding, breeding, and sanitation. Within each breed, production testing is encouraged. Because of the national scope of this program, considerable publicity is received by members who are able to produce qualifying individuals, so there is much interest shown by those who are anxious to improve their breeding herds.

For those breeders who do not belong to a State breed association, the Maryland Sow-Testing Program was established by the Extension Service. This program is serving as a valuable medium for dissemination of timely advice and material to the swine producers of the State. Efficiency and economical production form the keynote with the primary purpose of teaching the farmers the value of keeping records and making proper selection in his herd-improvement program.

We have encouraged the exhibiting of swine in all our State and County fairs and shows. We are attempting to establish the accepted standard classification for hogs in all the county fairs as well as the Timonium State Fair. Two fat-hog shows and sales are held each year which include hogs from both adult and junior producers. At the fall fat-hog show of the Eastern National Livestock Show last year approximately 300 hogs were shown and sold. At the spring show held this year at the Union Stockyards in Baltimore more than 400 market hogs were judged and later sold. These shows are conducted with the cooperation of the University of Maryland, the Extension Service, the Maryland State Fair Board, the Eastern National Livestock Show, Inc., and the Union Stockyards.

In addition to these two major fat-hog shows, there are a number of smaller shows and sales held throughout the State that are exclusively for 4-H Club and Future Farmers of America members. There are a total of five shows of this type held in the fall and spring. The average number of hogs entered in each of these shows last year was 75.

The hogs in these junior shows are graded according to the Danish system and sold in the ring in groups according to grade. It is believed that this is one of the most effective methods of teaching the producer the type and quality of hogs being demanded by the meat packers.

By sponsoring this type of program the extension people have an opportunity to teach judging, selection, management, feeding, showing, and marketing. Many good herds of swine have developed from the gilt purchased by the 4-H Club boy for a swine project.

The cooperative swine-breeding project being conducted by the Bureau of Animal Industry, U.S.D.A., the University of Maryland, and Blakeford Farms, Inc., has reached its seventh year and the herd is now at the point where breeding stock is available to farmers in the State.

The three-eighths Berkshire, five-eighths Landrace line has been developed by selecting animals on the basis of type, color, litter size, and weaning records. The object has been to develop a meat-type hog that combines the desired characters of the breeds involved. Feeding trials to determine efficiency of gain and carcass studies are being conducted.

THE OHIO SWINE IMPROVEMENT PROGRAM

By

H. M. Barnes, Extension Animal Husbandman
Ohio Extension Service

The Ohio Swine-Improvement Program is conducted at present as part of the extension swine project, and represents the combined planning of persons representing several agencies that are directly interested in the hog industry. This program has been 6 years in the process of development, including 2 years of trial operation in Preble County, and 2 years of State-wide operation.

The program is intended to be continuous in nature and has two broad objectives to achieve. The first of these is to locate and identify, from existing strains and breeds, litters of prospective breeding animals that meet superior standards of merit in reproductive ability, feeding and gaining ability, and carcass-producing ability. This objective is accomplished through a certification program which officially recognizes litters meeting the prescribed standards. Limited numbers of certified seed stock are being produced at present.

The second major objective of the program is the use of certified seed stock in the production of a volume of commercial hogs of superior carcass value, and the development of a marketing procedure that will reflect their additional carcass merit in the price paid to the producer. It is expected that the 1950 crop of such commercial hogs will furnish the first opportunity to sample and prove this product to the processor.

This improvement program has been approved by the purebred swine-breeders' associations of the State. The responsibility for the program rests with the Swine Improvement Association of Ohio, which lists breeders, commercial producers, marketing agencies, and departmental representatives from the college of agriculture and the experiment station in its membership. Collection of data and record keeping on the various litters is done by the extension animal husbandman, who serves as secretary for the association.

This program is supported by the hog producers because it is the product of their thinking, and they have had an active part in its development. The standards for certification reflect their point that the better slaughter hog, which is expected to yield more in meaty cuts and less in the lard can, must also be an economical one to produce.

The members chose to proceed carefully with the program, since they have no precedent to follow on such a broad scale. They are ready to adapt or alter it, if necessary, and will use experience and available information from other sources to do so.

WESTERN EWE FIELD-TEST DATA
From West Virginia Experiment Station

Presented By
E. A. Livesay, Head, Animal Husbandry Department

Comparison of lamb and wool production from grade western Corriedale and grade native Hampshire-type ewes. Southdown rams were used the first 3 years and Hampshire rams the last 2 years.

	First year		Second year		Third year	
	<u>Native</u>	<u>Western</u>	<u>Native</u>	<u>Western</u>	<u>Native</u>	<u>Western</u>
No. ewes started	65	65	57	64	55	61
Wt. when started (lbs.)	96	123	129	128	124	133
No. lambs born	65	70	56	87	75	89
No. lambs marketed	61	66	55	84	74	87
Wt. at marketing (lbs.)	69.50	69.80	76.80	73.70	75.40	76.05
Returns per lamb	\$ 9.93	\$ 9.53	\$10.12	\$ 8.90	\$11.76	\$11.67
Wool per ewe (lbs.)	4.44	11.94	5.14	9.04	5.79	9.40
Wool return per ewe	\$ 2.27	\$ 6.10	\$ 2.84	\$ 4.98	\$ 3.22	\$ 5.20
Total return per ewe started	\$11.49	\$15.77	\$12.55	\$16.58	\$18.92	\$21.76

	Fourth year		Fifth year	
	<u>Native</u>	<u>Western</u>	<u>Native</u>	<u>Western</u>
No. ewes started	53	59	47	53
Wt. when started (lbs.)	129	136	123	141
No. lambs born	56	83	61	66
No. lambs marketed	55	83	48	66
Wt. at marketing (lbs.)	79.66	81.20	82.30	88.10
Returns per lamb	\$14.96	\$14.68	\$18.51	\$20.61
Wool per ewe (lbs.)	5.52	10.03	5.94	9.27
Wool return per ewe	\$ 2.92	\$ 5.30	\$ 3.27	\$ 5.09
Total return per ewe started	\$18.16	\$25.41	\$21.75	\$30.46

SUMMARY OF PERFORMANCE OF THREE KINDS OF YEARLING EWES
OVER A 3-YEAR PERIOD--1947, 1948, and 1949 ^{1/}
From Virginia Agricultural Experiment Station

Presented By
George W. Litton, Extension Animal Husbandman

	Kind of Ewes		
	<u>Selected native</u>	<u>Commercial native</u>	<u>Montana Westerns</u>
Number bred	47	97	136
Number lambed	41	74	123
Percent lambing	87	76	91
Percent having twins	46	26	27
Number of lambs born	59	93	162
Number of lambs raised	49	62	128
Percent of lambs raised	83	67	79
Lambs raised per ewe bred	1.02	.64	.95
Lamb averages			
Daily gain	.53	.50	.50
Slaughter grade ^{2/}	80	79	79
Average fleece weight ^{3/}	7.8 (H) 10.0 (C)	6.59	9.1

- ^{1/} Data for 1949 on ewes bred and lambs raised but not included in daily gain and grade averages.
- ^{2/} The numerical values used for grades were: Medium 60-69; Good 70-79; Choice 80-89; Prime 90 and over.
- ^{3/} The fleece weight for selected natives with (H) and (C) after the weights show the weights for ewes sired by Hampshire and Columbia or Corriedale rams, respectively.
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WHAT WE ARE DOING IN 4-H CLUB WORK

By

Charles E. Bell, Jr., Livestock Specialist
Georgia Agricultural Extension Service

The 4-H Club program is given major emphasis by the Georgia Extension Service. The State 4-H Club enrollment in 1948 totaled 116,000 boys and girls. A program as extensive as this, naturally requires a great deal of effort on the part of the entire extension staff. Although each subject-matter specialist is not tied in to the same degree, all specialists have a responsibility to participate in the program.

Livestock production is becoming increasingly important each year in the Georgia agricultural picture. During the year 1948, 38 cents out of every dollar the Georgia farmer received came from the sale of livestock and livestock products. An industry as important as this in a cotton State warrants major efforts in the 4-H Club teaching program. Meat-animal projects were completed by 20,640 white and 4,297 Negro 4-H Club members during 1948.

Swine production continues to be the most popular project. Two types of projects have been emphasized in pig-club work. The purebred gilt chain and the barrow project. For a number of years, commercial concerns and civic clubs have been sponsoring pig chains. We have long felt that this plan was not as effective as it should be, because the sponsoring groups did not have the personal contact that should exist between the sponsor and 4-H member. Furthermore, full responsibility of the project supervision fell on the county agent's shoulders and, as he is a very busy man, this supervision was not usually adequate. Therefore, we set up a plan whereby a number of local business leaders in the county would each pledge themselves to purchase one purebred gilt and deliver it to a club member to repay the sponsor, 1 male pig and 1 female pig out of the first litter. The sponsor in turn placed the female pig with another club member, and retained or sold the male as he saw fit. The agreement obligated the sponsor to visit the club member at least once a month and be responsible for the supervision of the project. This plan accomplished several things. First, the businessmen and farm boys and girls developed a close relationship and respect for each other's problems. Second, the projects were almost universally successful because of the closer supervision and encouragement the club member received. Third, many business leaders received an education in hog production as well as an appreciation of the farmers' problems. Fourth, substantial prize money for county pig shows was insured because the sponsors became interested in seeing their boys and girls win. Fifth, the plan proved a real help to the county agent in developing a successful county 4-H program because of the enthusiasm these sponsors had for 4-H Club work in general. The plan worked so well in the first counties in which it was launched that it has become a general policy throughout the State in our pig-club promotion.

In addition to eight barrow show-sales scheduled for 1949, we are holding numerous county 4-H Club barrow shows throughout the State. A large portion of the county shows are now held in the "merit" basis. This plan grew out of an experiment in Randolph County 2 years ago. We realized that some club members were in a position to procure "typier" pigs than others and therefore

had an advantage to begin with. We strove to place the shows on a fair basis emphasizing the job of feeding that had been accomplished. To do this, each pig-club member began his feeding project within a few days of each other and started off with a feeder pig weighing as nearly 75 pounds as possible. The pigs were weighed at the start and a record was kept of the date and weight at the beginning of the project. When the majority of the pigs reached No. 1 market weights, the show-sale was held. Each hog was weighed in at the show barn and the average daily gains were computed by a disinterested party. The prizes were awarded on a basis of the best average daily gains. Folks like the plan, and it is proving an excellent way to educate club members in better feeding methods.

Georgia held 26 fat-cattle show-sales in 1948. This project has been a great factor in stimulating an interest in improved beef cattle. In order to increase the educational value of these events, we hold grading schools and contests in connection with most of them. Club members are becoming surprisingly efficient in grading both slaughter and feeder cattle. We used to experience great difficulty in obtaining record books on the enteries. Record keeping is an important phase of the 4-H project, but even the county agents themselves balked at the idea of filling out the voluminous records that were required. Therefore, we streamlined the record requirements by printing a simple card which included the essential information that we felt was necessary. Each club member is now required to submit this card at the time his or her steer is weighed-in at the show. We have had no difficulty in getting records on this basis. Furthermore, the county agent certifies on the back of the card that the club member has owned the steer for a minimum of 90 days prior to the show date and has personally cared for and fed the animal during that period. This helps to eliminate the unfair practice that is creeping into so many shows of breeders' feeding-out and fitting calves for their children.

In line with the emphasis that is being placed on livestock parasite control in our extension livestock program, we started a 4-H Club livestock pest control demonstration project in 1948. District contests were held to select the district winners from the county winners. A State contest was then held, and the State winner awarded a trip to the National 4-H Club Congress in Chicago. To stimulate individual ingenuity and research on the part of both county agent and boy, we did not write up demonstration outlines in the State office. Each agent was allowed to select any phase of external or internal parasite control he chose. It proved to be the most popular demonstration we had last year, with 32 counties participating in the district contests. This was the greatest participation we have ever had in a first-year demonstration project. The indicated participation for 1949 is 48 counties. The county agents found that these boys who participated were a great help in getting the people in their counties interested in parasite control. They put on their demonstrations before many local farm and civic group meetings. 89 boys were trained and 284 public demonstrations were given.

The Georgia 4-H Club livestock program is broad in scope and embraces many activities. The few examples cited here might be of interest to the workers in other States.

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REPORT OF COMMITTEE ON
STANDARDS FOR MEASURING PROGRESS IN LIVESTOCK PRODUCTION

Evaluating production projects continues to be one of our major problems. It is difficult to prove or disprove the value of our feeding, management, and breeding suggestions without known facts.

If we move into a period of lower prices and more competitive livestock production, efficiency of production will be of greater importance than it has been in several years.

Last year this committee reported on Record-of-Production projects being used in various States, and copies of several project outlines were sent to the States represented here at this conference. We will not repeat any part of the 1948 report, but wish to consider this report supplementary to it.

Livestock growers, breed associations, and extension workers are becoming more interested in Record-of-Performance programs.

The sow-testing program is expanding rapidly in nearly all States represented at this conference. This program has proved its worth.

We feel the "time is right" for more effort on this type of extension work, especially with cattle and sheep. We wish to urge all workers to use present known data on production factors, heritability of rate of gain, that have already been demonstrated by records of production in your own or other States. More publicity should be given production records through the use of news articles, pictures, radio, and regular extension meetings and demonstrations. The farms of cooperating growers who keep records are excellent for demonstration.

Information obtained in one State may not always apply in another, but results and summaries of the projects outlined last year should be very helpful.

The committee wishes to encourage extension workers to take the lead in the development of the measurement standards that will demonstrate our most efficient and economical production methods.

George R. Johnson, New York, Chairman
John E. Foster, Maryland
George W. Litton, Virginia
C. D. Lowe, USDA
M. W. Muldrow, Arkansas

REPORT OF COMMITTEE ON
REGIONAL LIVESTOCK MARKETING EDUCATION UNDER RMA

1. RMA Provides Basis for Regional Livestock Marketing Education

States within a geographical area may have a common or related interest in specific livestock problems.

Under the Research and Marketing Act it is possible to develop regional extension projects which permit livestock-marketing educational work in two or more states at the same time.

Regional RMA educational projects permit joint State participation and wider use of experienced personnel. Planning, organizing, and initiating such projects may require out-of-State travel for representatives of participating States.

2. State Staff Members Have Responsibility

The availability of RMA funds for livestock-marketing education places an immediate responsibility upon extension staff members. Our common objective will be to assist in the planning and development of regional livestock-marketing educational projects that:

- a. Meet specific problem needs of the livestock industry.
- b. Permit a coordinated approach to marketing problems of significance in the participating States.
- c. Will permit more efficient and effective marketing work.

3. Most Marketing Problems Are Regional in Character

States embraced in this region, in general, have similar production conditions for livestock and approximately the same market outlets for the livestock they produce. They have a common interest in consumer preference, market requirements and demands.

Producers need to be fully informed on numerous problems that arise in connection with the various phases of livestock marketing, such as available market information, grade standards used, seasonal movements, preparation for market, methods of marketing, and transportation and communication services available. Most of these regional problems are especially adapted to livestock-marketing educational work through use of Extension's facilities and methods. Examples may be cited as follows:

- a. Farmers in cattle feeding areas do not know the location, seasonality, and character of feeder-cattle supplies. Farmers in areas where feeder cattle are produced do not know the location, seasonality, and character of feeder-cattle demands.
- b. Prices paid farmers for market hogs under present grade standards, generally do not recognize the wide difference in values due to variation in percentage of primal cuts. Hog producers and consumers should benefit by improvements in marketing methods that reflect price advantages for quality meat-type animals. This would tend to cut surpluses of byproducts such as lard.

- c. Finding a dependable source of desirable ewes for flock replacement is a problem for most States in this region. There is need for a coordinated market system of locating, buying, and distributing western ewes.

4. Regional RMA Educational Projects Recommended

Three project action areas are recommended. Project a is given first consideration since it presents a timely economic problem.

- a. Project: Developing and expanding improved methods of marketing feeder cattle.
 - (1) Determining sources, character, and seasonal availability of supplies with current reported sale prices in States where feeder cattle are produced; then making the information available in States needing feeder stock. Possible participating states: West Virginia, Virginia, Kentucky, Tennessee and North Carolina.
 - (2) Determining sources, character, and nature of seasonal demand for feeder cattle; then making the information available to states having feeder cattle for sale. Possible participating States: Ohio, Pennsylvania, New York, New Jersey, and North Carolina.
 - (3) This development would strengthen any contributing State projects now in effect. Immediate action is necessary if effective for 1949 movement of feeder cattle and calves.
- b. Project: The development of a marketing system that will enable producers to sell hogs on their merits.

Hogs rank among the first enterprises as a source of income on farms of this region. Lard is in oversupply and is a depressing factor on the price of market hogs while consumer preference is for lean meat and less fat.

- (1) Standard grades and classifications of live hogs are needed so that commercial buyers can pay for hogs on a quality basis and thereby have prices paid to producers reflect the increased value of meat-type hogs.
- (2) In order to determine cut-out values, groups of hogs by grades need to be followed through packing plants.
- (3) Develop educational program for producers, handlers, and packers.

c. Project: Obtaining replacement ewes for farm flocks.

- (1) Local supplies of desirable replacement breeding ewes for farm flocks are not available in Kentucky, West Virginia, Virginia, Tennessee, North Carolina, and Ohio. Limited supplies are available in Texas, Oregon, Washington, Montana, Wyoming, Idaho, and other Western States.
- (2) Coordinated market methods should be developed that would permit more efficient movement of larger numbers of these desirable western ewes for distribution to flock owners of this eastern region.

5. Procedure for Planning, Organizing, and Initiating Regional RMA Educational Projects in Marketing.

- a. Determination of problem of common interest to two or more States in region. Then list:
 - (1) States affected.
 - (2) States willing to participate in project.
- b. Submission and consideration of proposals for participation in project.
- c. Development of operating plan and method of procedure for carrying on project. This involves determining:
 - (1) What information is already available.
 - (2) Plan for work.
 - (3) Where and when project is to be initiated.
 - (4) Personnel to be used.
 - (5) Cooperating agencies involved.
 - (6) Educational methods and materials required.
 - (7) Funds available, their source, and limitations on use.
 - (8) Probable cost.

6. Recommendations for Administrative Action.

A few livestock marketing problems can be solved by State action, but there are many problems that involve two or more States and can only be solved by regional attack.

There are already a number of experimental station RMA research livestock marketing projects that are organized on a regional basis. The specialists attending this conference are of the opinion that Extension RMA educational work in livestock marketing will need to use this regional approach if Extension is to make the most effective educational use of regional RMA research findings.

Therefore, the committee recommends that:

- a. Since commodities of all kinds have been marketed for two centuries, summaries of livestock-marketing research findings already made and past extension experiences in livestock-marketing education would indicate many things that can be done immediately to improve marketing procedures.
- b. Steps be taken to organize RMA livestock-marketing educational projects that are regional in nature and require regional action to solve.
- c. The Federal office of Extension be asked to assume leadership in helping to plan, organize, and initiate needed regional RMA educational projects in marketing.

7. Recommendations for Needed RMA Research

Changes in production and marketing practices of livestock need the support of experimental results. Research results available indicate need for changed practices. Extension workers and producers should be more familiar with these results. As an example, the carcass cut-out value of meat-type hogs is higher than the ordinary run of market hogs. Additional RMA research work is needed to develop market grades and standards for market use, so that prices paid producers will reflect increased values of quality carcasses and/or higher percentages of the primal lean meat cuts.

Many other examples could be cited. Such situations indicate extension specialists need to meet with research workers in an advisory capacity, to present current market problems that arise in the field.

C. W. Hammans, Ohio, Chairman
 Robert S. Boal, West Virginia, Secretary
 J. L. Boatman, USDA
 M. C. Bond, USDA
 C. A. Burmeister, USDA
 John H. Zeller, USDA
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REPORT OF COMMITTEE ON
LIVESTOCK PARASITE CONTROL

CATTLE

Ectoparasites

DDT should not be used as an insecticide for dairy cattle, in dairy barns, and on feed crops that may be fed to dairy animals. Methoxychlor is considered an effective substitute for use on dairy animals without any indication of harmful effects. In the interest of safety, DDT should not be used on cattle being finished for market.

Horn Flies

It has been shown that effective horn fly control can be obtained by the use of a 0.5 percent solution of DDT or methoxychlor.

It is also realized that different methods of application will be used and the concentration of sprays and the amount of material may vary with the locality and method of application. On the average stock farm, the materials will be applied by hand sprayers and small power sprayers.

Control. - Water-dispersible powder is the preferred form of material for use in horn fly control. Wettable powder has been found to be economical and effective under a wide variety of conditions, and no toxic symptoms have been observed in treated animals. A good emulsion concentrate, properly formulated and mixed, can be used. At present, however, it is difficult to designate specific emulsions for general use.

The concentration of spray and the quantity to use per animal depend upon the method of application and local conditions. It has been found that the most practical and effective concentration is 0.5 percent (8 pounds of 50 percent wettable powder to 100 gallons of water).

The quantity of spray necessary to wet an animal thoroughly will depend upon the breed and size of the animal and the method of application. The quantity of spray will average from 1 to 1.5 quarts per head.

Cattle Lice

One of the preferred materials for control of cattle lice is DDT.

1. If no application has been made for horn fly control, use one of the following treatments in the fall.
 - A. One thorough application of 0.5 percent DDT spray (methoxychlor is a good substitute at the same concentration).
For dairy cattle use: 2 pounds of 5 percent rotenone-bearing powder, 100 gallons of water; or, a 0.5 percent suspension of methoxychlor.
 - B. Two applications of 1 percent rotenone dust at 15-day intervals.

2. Spraying, dipping, or dusting with rotenone in cattle grub control operations will control lice, provided coverage is thorough.
3. Benzene hexachloride is effective. Any use of it at present should be restricted to beef animals and at concentrations not in excess of 0.06 percent gamma isomer.

Cattle Grubs

Rotenone is still the only toxicant recommended for the control of cattle grubs. The rotenone powder may be used as a dust or water suspension, and should be 325-mesh fineness and contain 5 percent rotenone. It may be applied as a spray, dust, wash, or dip.

Spray

Power spraying with at least 400 pounds nozzle pressure gives fast and efficient control. Complete saturation of grub-infested areas on the animal is essential.

Formula for spray:

7-1/2 pounds of 5 percent rotenone (or its equivalent to contain .04 percent rotenone) bearing powder.

100 gallons water.

Amount generally needed is 2 quarts per animal.

No wetting agent is needed if spray is applied with a power sprayer equipped with a suitable agitator.

Dusts

Treating the infested animals with 3 ounces of at least 1.5 percent rotenone dust is very effective, but slow, since the dust must be rubbed into the hair. The dust should contain approximately 1 part by weight of rotenone-bearing powder to 2 parts by weight of a heavy diluent such as tripoli earth or phrophyllite.

Washes

Treating by washes is very effective for the control of cattle grubs, although it is a slow, laborious procedure. The wash is applied to the infested area of the animal, which is scrubbed with a stiff brush. One pint per grown animal should be used.

Formula for wash:

12 ounces of 5 percent rotenone-bearing powder

2 ounces of soap or some other desirable wetting agent

1 gallon of water.

Interval between treatments. - For the most economical control, apply the material at 30-day intervals during the grub season. Treatment should start shortly before grubs reach maturity.

New materials, such as benzene hexachloride, chlordane, and chlorinated camphene are now definitely known not to control cattle grubs.

Area control for grubs is strongly recommended, since heel flies usually migrate for only a short distance.

Internal Parasites

Phenothiazine for Removal of Worms

Doses of 10 grams (about 1/3 ounce) per 100 pounds of body weight are effective for removing common stomach worms, trichostrongyles, and nodular worms, but larger doses are required for removal of ostertagia. Since this latter species occurs widely and is capable of severe damage to calves, doses of 20 grams (about 2/3 ounce) for each estimated hundredweight are generally recommended. The total dose, however, should not exceed 60 grams, or about 2 ounces.

SHEEP

Ectoparasites

Fleece Worms

The fleece worm treatment using Formula 793F consisting of

- 10 percent diphenyl
- 1 percent triton x 70
- 5 percent N - butyl alcohol
- 84 percent benzol

is still recommended, but preliminary research indicates that several of the new chlorinated insecticides at a concentration of 2 percent are superior to 10 percent diphenyl in protecting animals from reinfestation.

In areas where Formula 793F is unavailable, Smear 62 has been used with good results. Benzene hexachloride has been found effective in healing of fly sores where maggots are involved.

Sheep Ticks

Sheep ticks can be eradicated by one dipping in 0.2 percent DDT or other chlorinated insecticides applied as an emulsion or suspension. Eight ounces of 5 percent rotenone or its equivalent in each 100 gallons of water applied as a dip, is recommended.

Any of these will also control sheep lice.

Sheep Scab

Dip (shorn and unshorn sheep)

8 pounds of benzene hexachloride containing 6 percent gamma isomer per 100 gallons of water.

Sheep Head Bot

Control of the sheep head bot may be obtained by injection of 3 percent aqueous lysol solution into the nasal passages under 30 to 40 pounds pressure.

Internal Parasites

Gastrointestinal Roundworms

Phenothiazine is the most useful drug for removing and controlling gastrointestinal roundworms of sheep and goats. To remove these parasites, doses of 20 to 40 grams (usually 25 grams, or about 1 ounce) are given to adult animals and about one-half of these amounts to lambs and kids under 60 pounds. The chemical is administered in capsules, as drenches, or in any suitable feed-stuff. Treatment should not be given to ewes and does during the last month of pregnancy.

The free choice administration of phenothiazine in salt is a very effective control measure. It consists in making accessible to flocks of sheep a mixture of phenothiazine, 1 part by weight and loose salt, 9 or 10 parts by weight, as a means of self-medication.

Tapeworm

For the removal of intestinal tapeworms in adult sheep, a 1-gram dose of lead arsenate in a gelatin capsule is recommended; for lambs, one capsule containing 1/2 gram of lead arsenate is recommended.

SWINE

Ectoparasites

Mange

Benzene hexachloride (0.13 gamma isomer) applied as a spray will eradicate hog mange with a single treatment. There is indication that chlordane will prove to be an effective treatment.

This treatment will also control lice.

Lice

A 0.75 percent suspension of DDT is effective in controlling and eradicating hog lice. (Two sprayings of 0.5 percent DDT spray at 2-week intervals may be used).

Chlorinated insecticides should not be used within 30 days before slaughter.

Internal Parasites

A 1 percent concentration of sodium fluoride (technical grade) in dry ground feed for 1 day is recommended for the most effective and economical removal of the large roundworm (ascarid).

In the interest of safety, this treatment should not be given to pregnant sows within 30 days of farrowing.

William P. Tyrrell, Tennessee, Chairman
 L. K. Bear, Ohio
 J. T. Graves, South Carolina
 Jack Kelley, North Carolina
 R. C. Miller, Kentucky
 Benj. Schwartz, USDA
 Lynn Spiker, West Virginia
 Boyd T. Whittle, Maryland

REPORT OF COMMITTEE ON MARKET GRADE STANDARDS Uniformity in designation and interpretation.

The committee gave consideration to the problem of uniformity in grade terminology and in the interpretation of grade standards for livestock and meats with a view to eliminating confusion and misunderstanding among producers and buyers, facilitating trading, and guiding consumers in the selection of meats.

With these objectives in mind, the committee recommends that:

1. The terms used in identifying the grades of live animals for slaughter purposes also be used to identify the grade of the carcass derived from the animal.
2. Uniformity in the application and interpretation of official grade standards for livestock be accomplished through Federal supervision in which representatives of the Federal Grading Service work closely with State graders engaged in grading livestock commercially and with extension workers conducting educational demonstrations in grading.

C. P. McClaugherty, Virginia, Chairman
 A. J. Anderson, West Virginia
 Paul P. Hite, Tennessee
 Ray C. Hopper, Kentucky
 J. M. Pierpoint, West Virginia
 Robert E. Rector, New York

REPORT OF COMMITTEE ON COOPERATION WITH COMMERCIAL AND OTHER AGENCIES OUTSIDE EXTENSION

RECOMMENDATIONS:

1. As a general policy, financial or other aid may be accepted from individuals, commercial organizations or other agencies outside Extension. Such cooperators must exhibit a genuine and sincere interest in projects or programs that will bring benefits of an economical, social, or cultural nature to rural people.
2. The Extension Service must take the lead in the planning, organization, direction, and execution of any project or program where outside agencies contribute financial or other support.
3. Careful planning is essential in any program or project receiving support from outside Extension to insure individuals, organizations, or agencies wishing to cooperate full opportunity for participation.
4. Under some circumstances an individual or a single organization or agency may be the sole participant with Extension. This is not undesirable, provided substantial benefits are anticipated for the people within a certain area.
5. Individuals, organizations, or agencies should fully understand that cooperation with Extension can only be sought and permitted when it is predicated on a strictly educational basis.

L. A. Kauffman, Ohio, Chairman
L. S. Hartley, West Virginia
R. C. Miller, Kentucky

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REPORT OF COMMITTEE ON INFORMATION MEDIA, AUDIO-VISUAL AIDS, ETC., USEFUL IN PROMOTING LIVESTOCK PROJECTS

Media Available

Livestock extension specialists should be familiar with the several media available for carrying information to stockmen. Newspapers, especially county weekly publications, the farm press, radio and television are important. Workers should be familiar with all media and use them to reach numbers of people with the effectiveness provided by repetition.

Audio-Visual Aids

Colored slides and movies are good teaching devices and should be used more widely by county agents and livestock extension men. Recording devices are available that can be used in connection with radio broadcasts and picture projection. Most audio-visual aids involve substantial investments. Technical advice should be available to staff members to aid them in the selection and use of audio-visual aids.

Pictorial displays, scale models, method and result demonstrations, and tours are old tools. New and more successful uses of these devices as developed should be reported in detail.

General Information

Well-prefaced circular letters, leaflets, bulletins, project and program handbooks are indispensable in carrying on extension work. All workers should be well trained in the preparation and use of such materials. It is suggested that specialists make use of the report developed at the recent Cornell workshop on visual aids.

Benj. F. Creech, West Virginia, Chairman
L. K. Bear, Ohio, Secretary
C. A. Burge, Pennsylvania
Robert H. Black, West Virginia

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REPORT OF COMMITTEE ON THE RESPONSIBILITY OF PRODUCTION AND MARKETING SPECIALISTS IN 4-H CLUB PROJECTS.

4-H Club work ranks as one of the most important of all extension activities. The responsibility for an effective 4-H program is shared by all extension workers. Club projects could not be carried out successfully without the assistance and cooperation of subject-matter specialists. It is essential that the specialist believe in the program and have a thorough understanding of 4-H Club work, its objectives, established procedure, and how it is set-up.

Integration of adult and youth training from the specialist's viewpoint is possible to a limited degree, but the major portion of 4-H Club work must be approached from a different angle that recognizes the peculiar aspects of youth psychology. Education is progressive, and consideration should be given to the age group involved when 4-H material is prepared. Older teenage boys and girls are capable of assimilating more detailed and technical information than the younger club members.

I. Relationships:

1. State 4-H Club Staff

Whole-hearted teamwork should exist between the specialist and members of the 4-H staff. Frequent consultations between specialist and staff on all matters pertaining to 4-H livestock and livestock-marketing work will help to insure a harmonious relationship and effective results.

2. County Agents

The large turn-over in county extension personnel and the many young agents who are inexperienced in handling 4-H Club programs present a real need for the assistance of the specialist. The specialist is responsible for:

a. Subject-matter information.

Technical information must be translated into the simplest language possible. A valuable service is the supplying of timely information suitable for 4-H programs.

b. Guidance in planning and supervision of projects and demonstrations.

c. Assistance in training local leaders and advisers.

Where it is practical, the specialist can render a real service by conducting schools for 4-H advisers from a group of counties. He should at all times encourage the county agents to develop local leadership and work through them as much as possible.

II. Projects:

Individual projects carried through to completion are the basis for 4-H training. Boys and girls learn by actually doing things under the guidance of their county agents, advisers, and parents. The specialist has a definite responsibility in this field in outlining and teaching project development. Projects may be divided into three classes.

1. Result Demonstrations.

- a. Projects should be practical. Methods should conform to proved practices.
- b. Only projects that can be successfully completed with facilities available to club members should be attempted.
- c. Projects should be planned to develop progressively and enlarge as the club members' ability and experience increase.
- d. Feed-crop and pasture projects should be carried out in conjunction with livestock enterprises to insure a balanced program.
- e. The specialist should encourage tours of 4-H Club projects at every opportunity. This practice will enable other 4-H Club members as well as adults to benefit by seeing and studying the projects visited.

2. Method Demonstration.

This type of project offers an opportunity to develop leadership and provides a means for teaching techniques and methods to groups. County agents need the assistance of specialists in planning these demonstrations. The material should be presented to the county agents in a well-planned demonstration in order that they in turn can use it in training 4-H members and advisers. The demonstration should be practical and cover subjects of direct interest to 4-H Club members.

3. Contests.

Teaching sportsmanship through competition is a fundamental principle of 4-H training. The specialist has a definite responsibility in assisting with State and district achievement-day programs, livestock shows, and contests. The results obtained reflect to a large degree the standards that the specialist has set up and the effectiveness of his teaching methods. Honesty and good sportsmanship must always be stressed. The specialist should encourage county agents to get as large a participation as possible within the county in order that the maximum number of 4-H members will benefit from the contest.

C. E. Bell, Jr., Georgia, Chairman
 D. E. Brower, Jr., Virginia
 Joe Emch, West Virginia
 E. E. Grissom, Mississippi
 L. C. Madison, Pennsylvania

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PERSONS ATTENDING THE CONFERENCE

Arkansas

M. W. Muldrow, An. Hus., Ext., University of Arkansas, Little Rock

California

Howard Vaughn, Dixon

Georgia

C. E. Bell, Jr., An. Hus., Ext., University of Georgia, Athens.

Illinois

Jerry Sotola, Livestock Bureau, Armour & Co., Union Stock Yards, Chicago

Kansas

R. M. Hoss, Mktg., Ext., Kansas State College, Manhattan

Kentucky

R. C. Hopper, An. Hus., Ext., University of Kentucky, Lexington

R. C. Miller, An. Hus., Ext., University of Kentucky, Lexington

Maryland

J. E. Foster, An. Hus., University of Maryland, College Park

B. T. Whittle, An. Hus., Ext., University of Maryland, College Park

Michigan

H. F. Moxley, An. Hus., Ext., Michigan State College, East Lansing

Mississippi

E. E. Grissom, An. Hus., Ext., Mississippi State College, State College

North Carolina

Jack Kelley, An. Hus., Ext., North Carolina State College, Raleigh
 H. W. Myrick, N. C. Dept. of Agriculture, Raleigh

New York

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 G. R. Johnson, An. Hus., Ext., Cornell University, Ithaca
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 W. Finlay, Producers Comm. Co., Columbus
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 Stanley Marrs, PMA, Columbus
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 J. C. Emch, An. Hus., Ext., West Virginia University, Morgantown
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 C. H. Hartley, Asst. Dir. of Ext., West Virginia University, Weston
 L. S. Hartley, Agricultural Agent, B & O R. R., Morgantown.
 E. A. Livesay, An. Hus., West Virginia University, Morgantown
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 Ben Morgan, W. Va. Ext., Lewisburg
 J. M. Pierpoint, County Agricultural Agent, Clarksburg
 R. R. Reed, County Agent's Office, Clarksburg.

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A. T. Edinger, PMA, USDA
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